VIRGINIA WILDLIFE

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Virginia Conservation Commission Photo

From the mountains to the sea, Virginia displays her majestic outdoor beauty.

VIRGINIA WILDLIFE

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A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and Related Natural Resources, and to the Betterment of Hunting, Fishing and Outdoor Recreation in Virginia

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In This Issue

Cover

The chain pickerel is one of Virginia's favorite freshwater sport fishes. Artist Duane Raver captures the mood of this voracious feeder.

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Chester F. Phelps

CHESTER F. PHELPS NAMED NEW EXECUTIVE DIRECTOR

Commission picks career man from the department to replace retiring executive director I. T. Quinn

The Virginia Commission of Game and Inland Fisheries will have a new executive director on July 1, 1958. He is Chester F. Phelps, 48, chief of the game division. Phelps' appointment was announced by the Commission at its annual spring meeting in Richmond on April 4, 1958.

Phelps has held the position of chief of the game division, a job in which he has directed the work of 50 regular employees and approximately 40 hourly workers, since 1940. He has been with the Commission of Game and Inland Fisheries for more than 20 years.

Among Phelps' most notable accomplishments in Virginia have been the inauguration of the biologist program whereby game management was established on a scientific basis in Virginia; the development of the district biologist system — an administrative organization with a closely working relationship with game law enforcement personnel, which has been followed by many other states; the restoration of the deer herds west of the Blue Ridge, which has often been heralded as one of the best big-game restoration projects in the country; and the initiation of a land purchase program, during which such strategic areas as Hog Island, Saxis' Marsh, the Gathright tract and the James River access area have been acquired by the Commission. Another of Phelps' notable accomplishments has been his work for the replenishment of the wild turkey in Virginia. He first started work with wild turkeys when he built and operated a wild turkey farm at Camp Lee, which later came under the Pittman-Robertson program and was expanded to include other areas throughout Virginia. At present he is the oldest P-R state-coordinator in the country.

Phelps served in the Air Force from August 1942 until January 1946 and was discharged with the rank of captain. He then returned to the commission as chief of the game division.

In 1930 Phelps worked with the U. S. Forest Service, Southeastern Forest Experiment Station, Asheville, North Carolina, as field assistant on forest research on the Jefferson National Forest.

From June to December 1931 he was with the U. S. Department of Agriculture, Bureau of Plant Industry, Southeastern Forest Experiment Station, and later in charge of forest pathology laboratory, working in forest fungi.

From January 1932 to June 1933, he was with the Pennsylvania Department of Forests and Waters. In late 1933 he went with the U. S. Park Service Colonial National Park, Yorktown, a position he held until 1937, when he joined the game commission as a graduate fellow at the Virginia Cooperative Wildlife Research Unit.

"Chester," as he is affectionately known to his associates, has the technical wildlife and forestry academic training, has the administrative ability and know-how of public affairs and budgeting, and has the very special talent to work harmoniously with his own people and the public.

Phelps received his formal education at North Carolina State College, from which he holds a B.S. degree in forestry, awarded in 1931. Later he attended the Virginia Polytechnic Institute and received his master's degree in wildlife conservation in 1938. His thesis was entitled "Survival of the Bobwhite Quail on its Immediate Range."

Phelps, a charter member of the Wildlife Society, is married to the former B. Ann Wynne of Williamston, North Carolina, and has an eight-year old daughter, Ann. He resides in Henrico County just outside of Richmond. Among his favorite hobbies are hunting and fishing, photography and model railroading.

Commission Photo by Kesteloo

To achieve conservation, men must solve difficult physical and technical problems and learn how to manage people.

TODAY'S OPPORTUNITIES FOR CONSERVATION

By D. A. WILLIAMS

ONE of the most articulate conservationists of all time said, simply: "Conservation is a state of harmony between men and land."

But harmony doesn't just happen, as Aldo Leopold hastened to recognize by pleading eloquently for a "land ethic" that would guide man's behavior and help him to achieve that harmony.

Harmony, be it between nations in the world community or between man and nature, is gained only by great effort and maintained only by great vigilance. The word exists because there is another and opposing condition. Eighteen centuries ago Plutarch sagely commented: "Medicine, to produce health, has to examine disease, and music, to create harmony, must investigate discord."

Conservation of the soil, water, grass, timber and wildlife resources of our country is a constant, uphill struggle against the many forces and influences which man and nature oppose to that harmony Leopold used as a definition and measure of conservation.

Conservation becomes particularly more urgent as well as more difficult as the earth's human population grows. The problems created by our population "explosion" differ somewhat in the several fields of agriculture, wildlife and recreation, forestry, water supply, urban and industrial planning. Yet these are differences only in detail and perspective. The basic effect is the same: *more and more pressure on less and less land for more of everything that land provides. More food, more fiber, more wood, more water, more wildlife, more recreation, and more room for just living and working!*

To achieve conservation, therefore, we not only have to solve many difficult physical and technical problems. We also must arrive at social, political, intellectual compromises that will eliminate or effectively diminish the hindrances caused by land-use conflicts.

Land, together with its component elements of soil, water, grass, trees and wildlife, is the physical object of conservation. But who determines land use?

About four-fifths of all our land is in farms or used for grazing by farmers or ranchers. Most of our water falls on agricultural land and is therefore first of all an agricultural resource. Most of our timber grows on privately owned land.

Thus, any approach to the land of necessity must be mainly through its use for agriculture, and through the attitudes and actions of the men and women who, under our cherished American system, have great latitude in

Condensed address by D. A. Williams, Administrator, Soil Conservation Service, U. S. Department of Agriculture, before the 23rd North American Wildlife Conference, St. Louis, Missouri, March 3, 1958.

Photo by SCS
A lush bicolor planting illustrates the farmer's interest in producing food and cover for wildlife.

the management of their affairs and their property, including land.

This is no less true when it comes to wildlife conservation. Four-fifths of the game produced and hunted is on land under private control, and mainly on land owned or leased for the growing of crops or for grazing.

But agriculture is not necessarily inimical to wildlife. It is true that agriculture does displace some wildlife by altering its habitat. At the same time, agriculture creates new habitats — for the same kinds of wildlife at other locations, or for other kinds of wildlife whose requirements are better served by an agricultural landscape. As a result, there is probably more wildlife today than when our forefathers first saw our land.

As you travel almost anywhere in our country today, you can see the evidences of conservation progress based on a new concept of conservation. Modern soil and water conservation means putting to work on the land needed combinations of effective practices — combinations planned for and fitted to each acre of land, according to the use for which that land is best suited.

Such a land-use pattern, that respects the natural capabilities of the land, of a necessity includes a place for wildlife. Some land, uniquely suited to wildlife, is permanently dedicated to that use. The farm or ranch, planned and managed as a whole, produces wildlife as a primary crop of such areas, and as a by-product of the entire land unit.

Thus it is that modern conservation planning preserves countless acres of wetlands that would have been drained under the less scientific programs of 30 years ago. And the new water areas created by thousands of farm ponds and by hundreds of larger impoundments in watershed projects replace — in part at least — the wet areas that must yield to agricultural use. This is but one example of the way in which soil and water conservation preserves and creates wildlife habitat.

We still have a long way to go, of course, to reach that full measure of man in harmony with land. But I think we have made a fair start.

If it is a good start, should we not analyze how this much progress has come about? It may be a guide and a means of going the rest of the way more quickly and efficiently.

Without going into statistical details, let me merely report that last year the Soil Conservation Service helped more than one million farmers in soil conservation districts, to develop conservation plans, revise existing plans or to apply parts of their conservation plans. Soil surveys, which provide a sound basis for planning conservation, have been completed on more than a half billion acres.

Since the watershed Protection and Flood Prevention Act was passed in 1954, more than 800 local organizations have applied for aid in developing watershed projects. Of this number, 310 have been approved for planning, and operations have been started on 69 projects.

But the Soil Conservation Service has not been the only federal agency involved in the progress charted to date. Agricultural research has focused increasing resources on the problems of soil, water and vegetation. The cost-sharing aid extended through the Agricultural Conservation Program, the Conservation Reserve, and the credit programs adapted to conservation by the Farmers Home Administration have played an important part. The Forest Service and the Federal Extension Service have aided and encouraged the State forestry and extension services to bring effective conservation help to farmers and ranchers. These and other agencies have joined to develop such special programs as the Great Plains Conservation Program where a combination of conservation aids is, for the first time, being related to a single long-range conservation plan as a means of stabilizing agriculture in that area of high climatic hazards.

Still, government cannot, and should not, do this job alone. Private industry, increasingly conscious of the stake business has in a sound resource base, has made significant contributions to this movement, as have educators, civic, religious and many other groups.

But our conservation progress stems from something more. The existence, in the form of soil conservation districts, of *organized* local conservation effort by farmers and ranchers has, in my opinion, been the single greatest factor in the distance we have traveled thus far toward conservation of our total land resources.

Conceived 20 years ago as a hopeful experiment in the mechanics of operating a national soil and water conservation program, these soil conservation districts — 2,779 of them — have emerged as a unique example of successful local leadership of a program that must involve participation of government at local, state and national levels, as well as other segments of society — all focusing on the farmer and his land.

Today these districts include about 93 percent of all the farms and ranches of the country, and about 88 percent of the farmland. The districts have 1,728,000 cooperators — with a 37 percent increase in the last five years alone. This body of districts is more than a useful mechanism for channeling educational, technical and other conservation programs to the land. It is, in addi-

tion, a tremendous, vital, local conservation-minded segment of the agricultural population of the United States. Its governing bodies alone comprise some 14,000 local conservation leaders who, in turn, are banded together state by state and nationally into a group whose voice for conservation is strong and growing stronger.

Rapid as the development of soil conservation districts has been, it is safe to say that they have not yet begun to perform their full service to conservation. And that brings me to the main point of this discussion:

The time is right for sportsmen and wildlife organizations to join with soil conservation districts in a potent working relationship that will benefit all land resources and all users of these resources.

From the start, specific wildlife improvement practices have been incorporated into the farm and ranch conservation plans which soil conservation district cooperators develop and carry out. Over and above the widespread benefits to wildlife of plantings and water development for general farm improvement, nearly 4 million acres of special wildlife areas have been developed in soil conservation districts. The one and one-half million surface acres in farm ponds certainly provide more than incidental wildlife benefits.

In one soil conservation district in Wisconsin, farmers last year put 307 acres of agricultural lands to specific wildlife use — more than six times the amount in any previous year. In one 8-county area of South Carolina, 111,622 acres of farmland in districts have been planned and developed with wildlife as the primary land use, establishing lespedeza bicolor and other valuable wildlife plants in odd areas, power line rights-of-way, and in field borders. In Florida, districts have set aside 253,000 acres of privately owned land for wildlife improvement. This is made up mainly of land devoted to hedgerows, shrubby areas, swamps and marsh areas.

In West Virginia, since 1943, 13 million multiflora seedlings have been planted in 2,400 miles of fence. One district cooperator there recently checked his multiflora fence, established as part of his conservation plan. He counted 47 birds' nests in less than 100 feet of hedge.

To further this type of work, the Soil Conservation Service employs a number of biologists who train and advise our conservationists in recognition of wildlife opportunities in farm and ranch planning. These men work in close cooperation with the technicians of the federal and state wildlife agencies.

The State Game and Fish departments in a number of states have formal working agreements with soil conservation districts. In other states working arrangements are informal. Where this cooperation exists, the State wildlife agency may help the district develop the wildlife phase of its program, often provides free planting stock, helps in planning and installing wildlife practices, sometimes provides fish for stocking of ponds, and other services. In return, cooperating farmers provide planting sites, protect plantings and the wildlife, cooperate in game management and propagation. As just one example, 800 farmers in the Robert E. Lee district of Virginia

Photo by SCS

Trees and shrubs planted along streambanks prevent erosion and furnish shelter for wildlife.

planted wildlife areas on their farms in 1957. More than 5 tons of planting material were distributed to these farmers by the Virginia Commission of Game and Inland Fisheries.

Certainly, it would seem that districts offer an opportunity to work with farmers more effectively in the farm game habitat programs under way in 40 or more States.

I was disappointed to learn, however, that out of all the State Associations of Soil Conservation District Supervisors, only one has a working agreement with the organized sportsmen of the State. This would appear to be such a logical means of working toward improved farmer-sportsman relations and greater progress on wildlife conservation.

In asking our SCS offices in the States for some of the information I've just cited, I urged them to send along a few good up-to-date examples of the attention soil conservation districts are giving to wildlife conservation. The response was surprising and gratifying, for I received more than 350 items which we tried to classify, roughly, in terms of the main topic contained in each report or account.

Seventy-five described development of ponds or other fishing waters. Seventy dealt mainly with vegetative improvement programs for wildlife generally. Forty-five dealt specifically with improvement of waterfowl areas. Thirty related to cooperation with sportsmen clubs. Eighteen described projects for improvement of habitat for game birds. Sixteen were stories about the use of Conservation Reserve wildlife practices in districts. The remainder were divided between such topics as marsh improvement for furbearers, youth programs in wildlife conservation, wildlife aspects of watershed programs, and the like.

They indicated that a considerable number of sportsman clubs have recently obtained run-down farms and solicited district aid in converting them to productive wildlife areas.

A considerable number of farmers or ranchers, retired or no longer needing their land for crops, have used help of the district and the wildlife agencies to convert entire areas into wildlife havens or hunting areas.

A gratifying number of reports told of teamwork between a farmer or a group of farmers and a nearby sportsman club. In South Dakota, where the State Izaak Walton League makes annual awards to farmers for creation of wildlife habitat, the first, second and third place winners in 1957 were soil conservation district cooperators.

I have no basis for guessing what percentage of the total activity these reports represent. I can only say that I was pleased to see a sample which indicated such a considerable volume and variety of cooperative activities between districts and wildlife organizations.

There was, however, a serious jarring note. In a number of instances, I found a notation accompanying an unpublished item which said the farmer had asked that his wildlife improvement work not be publicized.

You don't need another reminder of this problem, but in this area of farmer-sportsman relations, too, farmers in soil conservation districts are beginning to take the lead. Several examples were called to my attention where it was a soil conservation district supervisor, or a leader in the district, who had taken the initiative in organizing a farmer-sportsman club for the mutual benefit of both groups.

That sort of thing could be developed locally in hundreds or thousands of soil conservation districts with the proper national, state and local encouragement.

Conservation farmers and sportsmen have much to offer each other. Farmers are, of course, the owners and custodians of the land on which sportsmen want to hunt. They protect and feed the wildlife, even though they do not own it. They can manipulate the environment in such a way as to increase wildlife populations. They can create dual-purpose water developments which serve both agricultural and recreational purposes. They represent respected farm leadership in the community and can influence adoption of favorable wildlife activities. Through their newsletters and other media they can publicize wildlife conservation opportunities.

Sportsmen, on the other hand, have much to offer to conservation-minded farm neighbors. They can support, locally and nationally, the programs and developments that will strengthen and help soil conservation districts. They can help non-farm people to understand farm problems. They can help others to see that wildlife comes from agricultural lands — that wildlife is a crop — as truly as corn, forage or trees — to be produced by conscious land management. Many farmers are themselves ardent sportsmen, and would welcome the further association of organized sportsman groups. Sportsmen can find ways of giving one or a group of farmers specific help in a conservation practice or development of value to the farmer, sportsman, and to the community.

They can assure farmers that they will be adequately compensated for extra effort or sacrifice of income incurred in producing wildlife harvested by sportsmen. They can develop means of protecting the farmer from undue harassment by hunters or fishermen.

Both groups can do this in the knowledge that working together to conserve these resources, they can each reap from the land those products and pleasures which it can yield so bountifully when it is used and developed to its greatest capabilities.

Speaking for the Soil Conservation Service, I can say that we shall continue to deal with wildlife as an inseparable part of the total ecological community on all land. We shall continue to seek the cooperation and assistance of the technical wildlife agencies in biology research and in the development of improved wildlife management techniques. We shall further encourage the farmers and ranchers we assist in soil conservation districts and watershed projects to take positive action on wildlife improvements as conservation works are planned and executed.

We *can* have productive farms and abundant wildlife — at the same time!

James River Conservation Group Organizes

A group of conservationists recently formally organized the James River Basin Association. Members of the association have elected as their goal the "conserving and developing of water and other natural resources in the James River drainage basin."

At the organizational meeting General H. B. Holmes, State Commissioner of Water Resources, elaborated on the extensive area and the importance of this drainage which contains approximately 10,000 square miles and embraces 32 of Virginia's counties.

Four objectives were outlined:

1. To engender interest in, to learn the available facts and to encourage the collection and development of new information concerning water and the other natural resources.

2. To provide a forum for presentation and discussion of views concerning water and the other natural resources of the basin and, if necessary, for the resolution of differences of opinions and aims.

3. To study and take an active part in proposals affecting water and the other natural resources of the basin, so as to insure that they are consistent with wise use and intelligent development, and to exercise this interest and participation in studies, plans or projects affecting the basin.

4. To encourage and promote those policies, laws, plans, and projects, affecting water and other natural resources of the basin, or the Commonwealth of Virginia, which will be most advantageous to, and in keeping with the desires of, the people who live in the James River basin.

W. Martin Johnson, consulting engineer from Lynchburg, was chosen chairman and Basil W. Coale, president of the Albemarle Paper Manufacturing Company, vice-chairman.

The association's first annual meeting was held on March 21 in the Hotel Jefferson, Richmond, Virginia.

Game Commission Photos by Kesteloo

Birds' Eggs
Their Size, Shape and Color

By ROBERTS MANN and WILLIAM J. BEECHER

THERE is usually a time, especially in his youth, when a man seems to have the instinct and habits of a pack rat or a crow. A boy is liable to collect anything from "lucky" pebbles or marbles to picture cards, stamps, cigar box lids or butterflies. There was a time, 50 years ago and more, when many boys — and men, too — collected birds' eggs. In search of nests they roamed the woods, thickets, meadows and swamps.

Of course, we lads acquired a fund of nature lore. It took sharp eyes, patience and knowledge of their habits to discover a meadow lark's nest hidden beneath a clump of grass, or the tiny lichen-covered nest of a hummingbird. But many boys and men took every egg from a nest and those were sad days for the birds. There was brisk trading of eggs between collectors, not only locally but throughout the country, and this hobby was so popular that there were several magazines devoted to it. Fortunately, now and for many years there have been stringent federal and state laws forbidding such practices.

Birds' eggs are extremely variable in every respect. The elephant birds of Madagascar, now extinct, laid eggs about 14 inches long with a capacity of about two gallons. In contrast, a hummingbird's egg looks like a small bean. Domestic chickens, when pullets, often lay very small eggs at first and the last eggs laid by old hens are apt to be unusually small. There are eggs with shells so thin and fragile that they are almost transparent but the sculptured porcelain shell of an ostrich egg, about six inches long, almost as much in diameter and weighing nearly three pounds, has to be opened with a hammer and chisel.

The eggs of birds vary in color from pure white to almost black. Those of the tinamous, South American game birds, have solid metallic colors and a finish like that of a new automobile. Most birds that nest in dark holes, like the kingfisher and the woodpeckers, lay plain white eggs; those of the killdeer, whip-poor-will, plovers and terns, laid in exposed places with no protecting nest, are colored like the soil or gravel and are very difficult to find. The majority of birds that build protective nests lay eggs having a ground color of some delicate tint with spots, streaks or scrawls of darker pigment such as purple, brown or black and, often, this forms a kind of wreath around the larger end. Robins and bluebirds have blue eggs but those of some other thrushes are spotted with darker color.

Birds' eggs are not even uniform in shape. Most of the 8600 or more species lay eggs shaped about like our familiar "hen fruit" but those of the owls and the Old World bee-eaters are nearly round, and many birds have eggs much longer than they are wide. The auk or murre nests on bare rock ledges of sea cliffs and lays an extremely pointed egg which, if accidentally kicked, will roll in a circle instead of over the edge. Plovers and sandpipers also lay pointed eggs. Arranged on the ground, with the points inward, they occupy less space and, although rather large, can be more easily covered by the brooding mother.

Some of the penguins, albatrosses and other sea birds that nest in accessible places lay only one egg. The California condor, nearly extinct, lays but one and that was true of the extinct passenger pigeon and the great auk. Wild ducks and game birds such as quail and pheasants, which have numerous enemies, lay 15 or more in a clutch. Most songbirds lay from 3 to 5 although hole-nesters like chickadees may lay 8 or more; tropical species seem to lay fewer eggs than their northern relatives; hawks and owls lay more eggs when their prey is plentiful; but nobody ever saw a square one.

Mr. Mann is conservation editor for the Forest Preserve District of Cook County, Illinois, and Mr. Beecher is senior naturalist.

The author examines a collection of sharks' teeth gathered from the river beds of Virginia's Northern Neck.

Fossils Are Fun

By FRANK D. EASTHAM
Warsaw, Virginia

(Game Commission Photos by Kesteloo)

THE VIRGINIA landscape once contained tropical swamps and shallow seas. Most of the state has been under water many times and for many years. At one time the Shenandoah valley was part of a vast inland sea. The shale, slate, sandstone and limestone of the Massanutten and Appalachian mountains speak of their marine origin. The coastal plains are old sea beaches and marine terraces. Marine deposits over two miles deep lie on the bedrock along our coast. Here lived whales, shellfish, sharks, corals, skates, huge barnacles, crocodiles and many other creatures. Their remains are all around us.

Outdoorsmen are familiar with many types of fossil remains. They have wondered at finding many plant and animal remains — apparently turned to stone and imbedded in stone itself. Miners find ferns, fish and whole trees turned to coal. Fishermen and beachcombers are amazed to find bone and teeth protruding from cliffs fifty feet underground. What do these things mean and where do they come from?

Superstition has explained them in many ways. American Indians wore them as ornaments and used them for tools and weapons. The early colonists wondered about them. The first American fossil to appear in literature was a shellfish, *Ecphora quadricastata,* and was described by Martin Lister in 1685. It is found in Maryland and Virginia.

These fossils are simply the remains of plants and animals that were the wildlife that lived in Virginia long ago.

Although the fossils we pick up have value only to a collector, a great part of the world's commerce depends on fossils. Without fossil remains man would still depend on the ox and the mule for transportation. The world's armies, navies, merchant marine fleets and railroads run on fossil remains known as coal, gas and oil.

About ten years ago I became interested in Virginia fossils when a friend in Surry county showed me some shark teeth that he had found in the cliffs along the James River. When I saw these fossils and found out that they were millions of years old, it started a long search that becomes more interesting as time goes on. My family is enjoying one of the fastest growing hobbies in Virginia — collecting fossils and rocks. Folks who would not look at a fossil a few years ago now have nice collections. Some of them can even identify what they have. "Rockhounds" stumble on fossils while looking for gems and "pebblepups" are constantly finding fossils in their gravelbeds. Pretty soon they are hoarding fossils and another hobby is born. Actually, rock collectors soon find that they have to know a great deal about fossils in order to identify rocks.

In fact fossil remains have built much of our landscape and have been some of the great soil builders of the world. Limestone rock is mostly fossil remains and deposits over 3,000 feet thick are known. From limestone comes marble, lime, concrete, mortar and many building stones. The Roman Colosseum and the Egyptian pyramids were built of fossil rock. Tombstones and statues are made of fossil marble. Chalk used in our schools is from fossil deposits laid down a hundred million years ago.

Fossils are found in the solid rock at the bottom of the Grand Canyon, indicating that they were there during the eons of time that it took nature to build a mountain of rock a mile high and through the millions of years that it took the Colorado to cut a channel a mile deep.

Microscopic fossils are abundant in Virginia and some collect them. The diatom fossils are used in industry.

They are used in many types of filters, as a filler in dynamite, in cleaning wool, in purifying oil, in household cleaners, and for many other things. These fossils are very interesting if you have access to a microscope.

Collecting is a lot of fun. You start half heartedly until you make a good find and then the bug gets you. Some people collect only shells, some only teeth, some only bone. I know of one man who only collects whale ear bones. My family collects anything that looks like a fossil and then wonders what to do with it. We had quite a thrill when we found our first two-inch shark tooth. Then we found one that went over three inches, then one over four and finally a big one that went over five. Finally we found a whopping fragment that went over six inches. We are now looking for the other half of the six incher. When that's found, we'll search for the seven and eight inchers. Another big moment was when the first crocodile tooth came along. The first earbone from a whale was as welcome as the others. A Maryland friend has found one in twenty years of collecting and we found two in one day.

There are many places where fossils can be found. The most abundant and easiest to collect are shells. I recently found a nice variety on the streets of Williamsburg. Marl pits, roadbanks, limestone ledges, old weathered stone fences, stream and gravel beds in limestone country, and the tidal rivers are good hunting grounds. Fossil remains are usually found in some material that sealed them soon after death from air and extremes of temperature. Sandstone, reddish-colored sands and soils, and well drained cliffs are poor places for fossil hunting. Also there are few fossils in igneous rock such as granite and quartz. Heat and pressure have destroyed most remains.

A good place for fossil shell hunting is on the Yorktown peninsula along the rivers and in banks and road cuts. The James, York, Pamunkey, Rappahannock, and Potomac are all good places to look. The new toll road through Richmond recently yielded some nice fossils —

A favorite method of locating fossils is to walk the beach and sand bars during low tide.

Another good place to look for fossils is along the river banks like this section of the Potomac River. (Insert: Author chips fossils from boulder.)

along with some headaches for the engineers on that project. In these areas will be found many fossil remains that will run from ten to sixty million years old. Here lie the remains of many shellfish, of coral reefs and giant barnacles. Here are whale bones, shark teeth, crystal casts, skate and ray teeth, crocodile bones and teeth. Here once swam the mighty *Carcharodon* shark — the largest fish ever known on earth and the terror of the Miocene seas. Beside him swam the tiny shark, *Sphyrna prisca,* with teeth no larger than a blackberry thorn.

There are pitfalls in fossil collecting. If you like to fish, hunt, or play golf, don't start. These sports will become stale and tame once the collecting bug gets you. Another mistake is in collecting the wrong material. I recently found an ancient oyster shell at the base of a cliff teeming with fossils. It looked to be at least a million years old. As I was cleaning the supposed fossil I found a live oyster in it. Another annoyance is to discard material that you later find to be collectors' items. I searched for crocodile teeth on many trips without success. When I found one I showed it to my wife and found that she and the boys had been throwing them away; they were looking for shark teeth.

Unhappily there are few good reference books to help identify Virginia fossils — especially for laymen. The Virginia Geological Survey publishes a rather technical bulletin, No. 52, *Geology of The Appalachian Valley in Virginia,* but it has many good illustrations and tells where they may be found. The National Museum in Washington is very helpful in identifying good specimens.

When collecting beneath overhanging cliffs, especially along the tidal rivers, be careful of landslides and falling debris — especially when the ground is wet or freezing and thawing. I have seen dozens of slides involving thousands of tons of earth and rock. Some of these cliffs are over a hundred feet high and a small rock can ruin a good hat. Also I would caution the amateur about storms and rising tides. We have been caught several

(Continued on page 24)

Photo by SCS

Bicolor plantings thrive where woods join cultivated fields. Most farm crops do poorly on woods edge. Here wildlife foods supply the necessary "edge" effect for wild animals.

CARE AND MAINTENANCE OF BICOLOR LESPEDEZA

By WALTER ROSENE, JR.

FIGURES sometimes startle you. My most recent experience with surprising figures came at a meeting of State Biologists and SCS personnel held in Spartanburg, S. C. As representatives of the Southeastern States gave their figures on bicolor plants produced annually, the totals became impressive. Everyone was astounded when the final number of 50 million was reached. Production is expected to go still higher. These plants have been made available through Pittman-Robertson programs, and over 80 percent are distributed to farmers in soil conservation districts.

People in the Southeast can well be proud of this accomplishment. No other region is progressing so rapidly in developing wildlife habitat.

Since production of bicolor nursery stock has been so successful, the establishment and maintenance of plantings is of immediate concern. Quail like bicolor seed and most plantings are made for this game bird, but the care of the plantings is the same no matter what the intended use. Let's look at a typical planting made for the bobwhite.

Verne E. Davison, SCS regional biologist, has recommended 1/8-acre strips. This amounts to 660 square feet and is probably somewhere near the size required for a covey of quail. Davison realized that this size was practical from the standpoint of field operations, since it would utilize 1,000 1-year old seedlings. Therefore, if a farmer were receiving 10,000 he would have sufficient for 10 strips.

Bicolor plantings fit into most farming operations. On farms where woodland joins a cultivated field there is a sapped strip of soil on the woods' edge where agricultural crops cannot be grown profitably. These field borders will grow bicolor. Strips may also be grown successfully in open stands of woodland. All plantings must be on well-drained soils and must be protected from grazing.

The average planting for quail is five rows wide, with the spacing between rows 30 to 36 inches, depending on the width of cultivator used for other agricultural crops. Seedlings should be set 2½ feet apart within each row. To use 1,000 seedlings in this manner will require a strip approximately 500 feet long. Sometimes it is necessary to alter the width or length of a strip to fit the

Courtesy of *Soil Conservation*. The author is a biologist, United States Fish and Wildlife Service, Gadsden, Ala.

land use or the space available. Cultivation is necessary the first summer when growth begins and may be done when other crops are worked. With a good stand of plants and sufficient growth, cultivation usually is not necessary the second growing season or thereafter.

It is best to prepare a site well ahead of planting, so the soil will settle. If many strips are to be established, fall preparation is recommended. Any type of plow may be used. Fertilizer can be applied in rows as strips are prepared and should be in the soil prior to planting. Complete fertilizer is recommended at the rate of 600 to 800 pounds per acre. Nitrogen may not be necessary on some soils but is recommended generally. Phosphate and potash are essential.

Good stands have been obtained with various methods of planting. Setting the seedlings by hand is best but also the most laborious. The quickest way is to open a furrow with a turn plow, drop the plants against the vertical side of the furrow, then cover them with another furrow throwing the soil at least 4 inches higher over the seedlings than their depth in the nursery row. A tractor wheel may be run alongside the plants to firm the soil. Any method which packs the roots in well-settled soil is good. November to April is the best planting time in the Southeast.

Game Commission Photo by Kesteloo

Sites for bicolor and other wildlife food should be carefully prepared before planting. Disking and fertilization are recommended.

SCS Photo by Davison

For maximum value wildlife plantings should receive careful maintenance in the form of weeding, fertilization and occasional replanting.

To be considered successful the first year, a strip must be free of weeds, make at least 5 feet of growth, and produce a crop of seed. Tests on yields of year-old strips have revealed seed production up to 350 pounds per acre. In subsequent years the stems should reach a height of 6 to 8 feet and have a seed yield of 300 to 400 pounds per acre. If a strip fails to attain their height, weeds will grow beneath the bicolor stems and only a light seed crop can be expected. In this condition the planting is nearly worthless to quail, and a maintenance operation is necessary. It is essential for seeds to fall on soil free of weeds if they are to be available to quail. Since bobwhites scratch very little, the seed must be found easily.

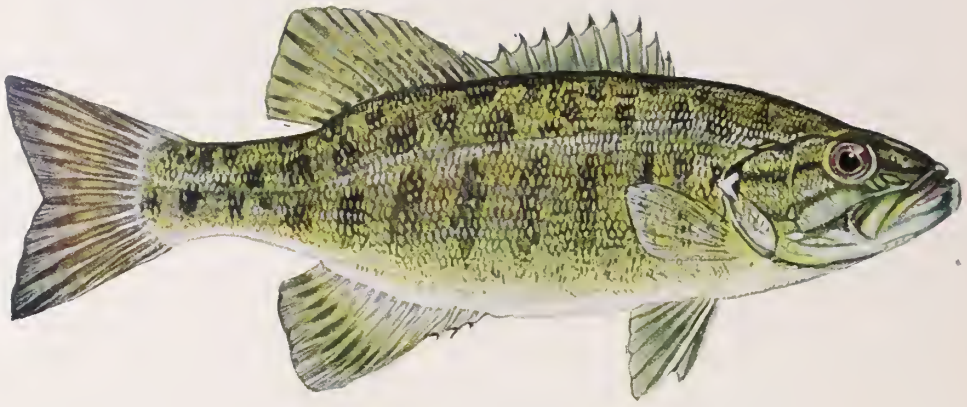
After the first growing season, it is usually desirable to cut the stem back to 6 to 8 inches above the ground so it will sprout from the crown in the second growing season. This thickens the growth, makes dense shade, and assists in weed control. In most cases the renewed top growth results in a heavy seed yield.

Periodic maintenance is essential for all bicolor plantings and should be carried out as often as necessary to keep the strip thick and producing seed. Experience indicates that on average soils maintenance treatment will be necessary about every third year. Deterioration of a planting is indicated by the following symptoms: (1) Invasion by broomsedge or other weeds, (2) short terminal growth, (3) light seedings. All of these signs are usually present when a patch is "on the way out."

Cutting back, fertilizing, and disking may all be necessary to restore good growth. Fertilizing and disking probably are most important. Disking the strip destroys broomsedge crowns, and the application of fertilizer assures sufficient bicolor growth to shade out weeds and grass. Fertilizer should be broadcast on the strip at the rate of 600 to 800 pounds per acre. Disking then works it into the soil and destroys herbaceous growth.

Maintenance practices vary according to the scale of operations and types of equipment at hand. Where a large number of strips are to be handled, and where a variety of equipment is available, the tops are first cut with a brush cutter. Then fertilizer is applied with a drill and worked in with a disk. If a brush cutter is not available, the tops may be cut with a mowing machine fitted with a sharp blade and a new set of guards. In some instances strips have been disked without cutting back. Hand clippers and brush hooks have been used also, but the latter are not very satisfactory since they split the stems down to the crown.

If you want to hear the whirr of birds as you and your dog go exploring in the fall, try some bi-color — and give it the maintenance that will keep it producing.



SMALLMOUTH BASS
Micropterus dolomieu dolomieu Lacepede

LARGEMOUTH BASS
Micropterus salmoides salmoides (Lacepede)

Virginia

Freshwater Game

Reproduced from Freshwat
Fishlife in Virginia are the
freshwater game fishes. Th
peared on these pags in t

Illustrated

WALLEYE *Stizostedion vitreum vitreum* (Mitchill)

REDBREAST SUNFISH *Lepomis auritus* (Linnaeus)

nia

me Fishes

water Fishing and

the six remaining

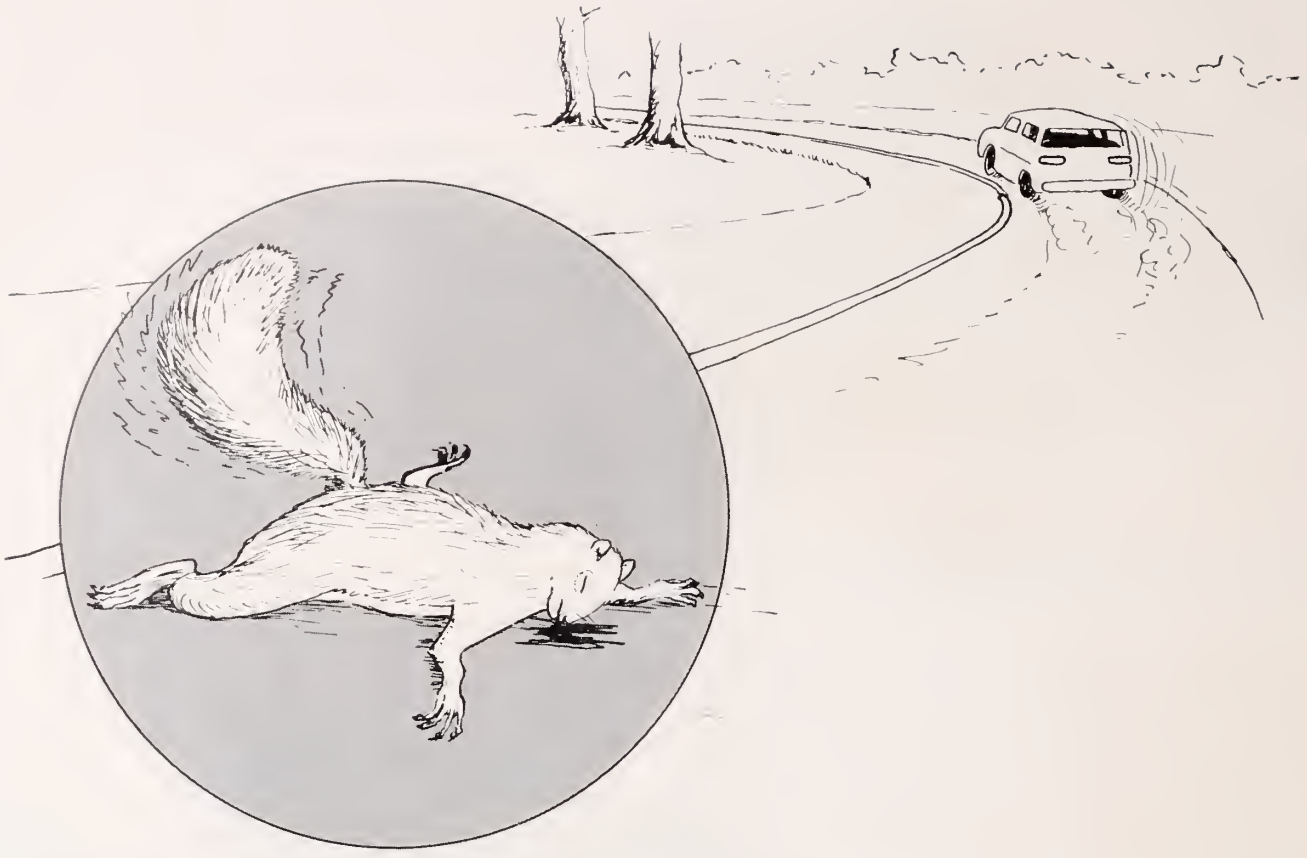
. The other six ap-

in the April issue.

ne Raver

WHITE CRAPPIE *Pomoxis annularis* Rafinesque

BLACK CRAPPIE *Pomoxis nigro-maculatus* (LeSueur)



More squirrels are killed on Virginia's highways than any other animal.

Death on the Highway

By JACKSON M. ABBOTT

THE annual loss of human life due to traffic accidents is woefully high but it is only a fraction of the actual highway death toll when wildlife casualties are included.

From June 1956 to June 1957 the writer kept a daily record of birds and animals killed on the 11-mile stretch of the scenic Mount Vernon Memorial highway between Alexandria and Fort Belvoir, Virginia. During this one-year period 102 trips were made over the route. A casualty list kept during this period included 138 dead birds of 25 species and 190 dead animals of 12 species, for a total of 328. Had the list included amphibians (turtles, frogs and toads) and reptiles (snakes and lizards) the total figure would be more than doubled. The table lists the species of birds and animals and the number killed each month of the year. From the table several interesting facts are revealed for the 11-mile stretch of road.

1. The peak number of casualties occurs in the spring and early summer.

2. More gray squirrels are killed than any other animal.

3. Robins are the most frequent traffic victims among the birds (excluding the unusual one-day slaughter of chimney swifts).

4. The greatest number of a single species to be killed in one day was 31 chimney swifts (a fast-flying, close kin of the hummingbird).

There is a simple explanation for the majority of wildlife casualties occurring in the spring and early summer. This is the season when most forms of wildlife are preoccupied with staking out homesteads, selecting mates, and raising young. When the young birds and animals venture away from home, they are inherently carefree and consequently heedless of danger on their youthful rambles, which take many of them across a highway. Thus, the majority of wildlife killed on highways at this season are juveniles.

Jackson Miles Abbott is the son of the late Jacob Bates Abbott who was well known for his artwork on birds and animals. Jackson recently received recognition when his artwork was chosen for the 1957-58 duck stamp.

Anyone who has watched a squirrel cross a road knows why more of them are killed by cars than any other animal. When he gets out into a road he often just can't seem to make up his mind whether to go on across, come back, or stop and look around. Many a driver proceeding at a 40 or 50 mph clip has suddenly been forced into playing that hair-raising teen-age game of "chicken" with one of these indecisive gray rodents. I have seen drivers swerve back and forth trying to avoid running down a squirrel frisking in the roadway, and in so doing nearly run off the road or into another car. The squirrel loses most of these bouts but the drivers invariably get "all shook up."

Rabbits, which are second in numbers killed by autos, are temperamentally opposite of the squirrel. Bunny will sit in the road seemingly transfixed and allow himself to be run over, or will suddenly dart under the wheels of a car as it goes by. Rabbits appear not to sense danger from automobiles where squirrels seem to realize the danger but can't make up their minds what to do about it.

Among the birds, robins are one of our most common summer residents. They apparently are unafraid of man and often frequent the roadside grassy areas and bushes for food. Flying only a foot or two above the ground as they cross the road in their quest for food, they are very susceptible to death by automobiles.

The extraordinary number of chimney swifts killed on the highway on May 21, 1957, is, to my knowledge, an occurrence without precedent. These summer denizens of our chimney flues normally feed on insects in the air above roof-top level but will skim low over the surface of a lake or stream. On this particular date myriads of newly hatched insects were swarming low over the causeway across Hunting Creek coincidental with a heavy northward flight of swifts up the Potomac River. In their search for food hundreds of swifts swirled in the air over the causeway, many sweeping to within a few feet of the road. Intent upon their insect dinners, 31 met death head-on in the heavy 5 p.m. traffic along the 300 yards of causeway.

The single crow casualty and the two starlings became victims because of their taste for carrion. They were feeding on dead wildlife traffic victims when their number came up. Although carrion is a regular source of food for the crow it is an unusual diet for the starling. However, there have been several records of such indulgence by starlings and the writer has even seen a mockingbird partaking of this type food.

Animals like the skunk and opossum are nocturnal foragers. When crossing a road at night they are hypnotized by the headlight glare of automobiles and often fall prey to the rubber-tired monsters.

It is believed that most of these wildlife casualties are unintentional as far as the drivers are concerned. However, on two occasions the writer saw a driver deliberately run down an animal. One man swerved out of his unobstructed lane to run over a muskrat sitting in the gutter, just off the curb. The man didn't even stop to pick up the pelt. Another driver turned out of his lane to run down a rabbit sitting on the white center-line. On the other hand I have seen a man stop his car, get out and pick up a turtle which was crawling across the road and put it on the ground out of harm's way.

In most states where roads traverse heavily wooded areas signs are posted to warn motorists to watch for wildlife in the road. Most drivers are familiar with the "Caution—deer crossing" signs in areas where the deer are numerous. Out in the prairie states where highways cross the natural migration route of the prong-horn antelope, special underpasses have been built so that the animals may cross in safety. And, of course, farmers build fences to keep their livestock off the highways.

Unfortunately, there seems to be no practical way of preventing thousands of small birds and animals from becoming traffic victims each year. This is one of the problems which Dame Nature must solve by developing wildlife instinct to the point where it registers "caution" when confronted with a concrete or asphalt "path" winding through the countryside.

Wildlife traffic casualty list for one year on an 11-mile stretch of the Mt. Vernon Memorial Highway, Fairfax County, Virginia

	Species	Monthly Toll												Total
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	Animals													
1.	Cat	2	1	2	1	....	1	....	....	1	1	2	....	11
2.	Dog	....	....	....	....	....	....	1	1	....	....	....	....	2
3.	Red Fox	....	....	1	....	....	....	....	....	....	....	....	....	1
4.	Opossum	....	3	2	5	2	3	....	2	1	....	2	2	22
5.	Common Skunk	....	2	....	....	1	1	1	3	3	1	....	....	12
6.	Cottontail Rabbit	2	5	3	7	3	3	4	1	4	3	6	1	42
7.	Woodchuck	....	....	....	....	....	....	....	....	1	....	....	....	1
8.	Muskrat	....	....	1	....	1	....	....	....	....	....	....	....	2
9.	Brown Rat	....	1	....	2	....	....	....	1	....	....	1	....	5
10.	White-footed Mouse	....	....	....	1	....	....	....	....	....	....	....	....	1
11.	Gray Squirrel	1	4	1	13	17	16	11	6	7	4	4	4	88
12.	Fox Squirrel	....	....	1	2	....	....	....	....	....	....	....	....	3
														190
	Birds													
1.	Bob-white	1	....	....	....	1	1	....	....	....	....	....	....	3
2.	Barred Owl	....	....	1	....	....	....	....	....	....	....	....	....	1
3.	Pigeon	....	....	....	....	....	....	1	....	....	1	....	....	2
4.	Mourning Dove	....	....	....	....	1	....	....	....	....	....	....	....	1
5.	Yellow-billed Cuckoo	....	....	....	....	....	1	....	....	....	....	....	....	1
6.	Chimney Swift	....	....	....	....	31*	....	....	....	....	....	....	....	31
7.	Acadian Flycatcher	....	....	....	....	1	....	....	....	....	....	....	....	1
8.	Crow (Common)	....	....	....	....	....	1	....	....	....	....	....	....	1
9.	Blue Jay	....	....	....	....	2	....	....	....	....	....	....	....	2
10.	Carolina Chickadee	....	....	2	2	1	....	....	....	....	1	....	....	6
11.	Mockingbird	....	....	....	1	....	....	1	....	....	....	....	....	2
12.	Brown Thrasher	....	....	....	....	3	1	....	....	....	....	....	....	4
13.	Catbird	....	....	....	....	3	1	3	....	1	1	....	....	9
14.	Robin	....	1	2	5	3	6	2	3	....	1	....	....	23
15.	Wood Thrush	....	....	....	....	....	1	....	1	1	....	....	....	3
16.	Red-eyed Vireo	....	....	....	....	....	1	....	....	....	....	....	....	1
17.	Myrtle Warbler	....	....	1	....	....	....	....	....	....	....	....	....	1
18.	Starling	....	....	....	1	7	4	....	....	....	....	....	....	12
19.	Purple Grackle	....	....	....	....	4	4	....	....	....	1	....	....	9
20.	Orchard Oriole	....	....	....	....	....	1	....	....	....	....	....	....	1
21.	Cardinal	....	....	2	3	1	4	3	....	....	....	1	....	14
22.	Purple Finch	....	....	1	....	....	....	....	....	....	....	....	....	1
23.	Red-eyed Towhee	....	....	....	....	....	....	....	1	....	....	....	....	1
24.	Chipping Sparrow	....	....	....	....	....	....	....	1	....	....	....	....	1
25.	Song Sparrow	....	....	1	2	....	1	2	1	....	....	....	....	7
														138

*All killed in one day on one 300-yard stretch of highway across Hunting Creek.

The destiny of any nation at any given time depends on the opinions of its young men under five-and-twenty.

—Goethe.

A common sight in Virgina: bulldozing off hardwoods to make room for pine.

Weep for our Wildlife

By JAMES E. MAYS, *Outdoor Editor*
The Virginian Pilot and The Portsmouth Star

(Commission Photos by Kesteloo)

Editor's Note: Systematic eradication of hardwoods is being practiced in many areas of the South, where millions of acres of hardwoods are being poisoned by specially trained crews of woodsmen. Foresters and landowners say pine grows faster than hardwoods and returns more dollars per acre per year. Hardwoods, for which the market is dwindling, tend to shade out young pine trees, hence the poisoning program.

Weep, all ye who loved the towering hardwood forests.

Weep for the oak, the hickory and the old rail fence.

Weep for the gray squirrel, the turkey, the deer and the bear.

Weep for the bobwhite quail and the grouse.

Weep, while the winds of wildlife destruction blow strong over the southland.

This is the New South, they say.

In the New South, efficiency is the byword . . . be efficient.

Kill the hardwoods and you'll be efficient, they say. In the New South there is no room for the hardwoods. Hardwoods are not efficient enough, they say.

Farm clean, they say. Plow every inch. Plow close to the fences and the ditch banks.

Haven't you heard, boy? This is the New South.

You've still got an old inefficient rail fence? Tear it down, boy, quick, before somebody tells you you're inefficient.

Be Efficient

Put up a single strand of wire where the old rail fence was, and plow right up to the wire on both sides. Be efficient.

Reprinted from the August 25, 1957, edition of *The Virginian Pilot* and *The Portsmouth Star*.

Left to right, top to bottom: A gray squirrel searches for food in an oak tree; hardwoods, especially maple, form the predominant browse foods for deer; black bear, raccoon and squirrels need hardwood trees for their dens; the omnivorous opossum loves a mixture of hardwoods and conifers for its home.

What if the hickory and the oak grew nuts and acorns for the squirrels and the turkeys?

What matter if the hardwoods furnished food and den trees for the raccoons and the bears?

And that old rustic rail inefficient fence. So the quail found food and covers in its corners where the plow did not reach . . . so what?

In the New South, who cares?

And if even now the bones of the oaks and the hickories stand whitening amid the sapling pines, who is to say it's wrong?

There are other whited sepulchres in the southland, too . . . look at your crumbling antebellum culture. Look and flinch, and poison another hardwood; rip asunder another ancient rail fence.

What does it matter if the New South will feel the effects of man's deliberate devastation of wildlife habitats for decades to come?

It Will Be Too Late

Sure it will be too late then but we'll have that New South, all shiny on its chrome-plated surface, but barren, cold and empty where its heart used to be.

And on Sundays in the New South we can take the kids to the zoo so they can see a bear, a deer, a grouse and a wild turkey behind one of those efficient wire fences.

We can tell them how it was when Daddy was a boy, about the heart-stopping explosion when a covey of quail was startled along an old rail fence.

At Christmas we can go to an efficient supermarket and buy some hickory nuts. Maybe they'll have some at the supermarkets.

Maybe we can buy a pitiful cluster of oak leaves with the acorns still attached and hang it on the wall so the kids can see what the wild turkey, the squirrels and the bear ate in the dreadful dead days of the Old South.

And Old Tige can howl mournfully through the snow and no one will care in this New South that has no birds for him to point . . . no one will care, that is, except Daddy who remembers exploding quail.

Snow? You won't have to worry about snow in the New South . . . no sir. Let it snow. There will be no game to starve in the snow. It will have starved a long time ago — the time Daddy wept for the oak, the hickory and the old rail fence.

Herpetological Society of Virginia to be Organized

During February and March 1958, fifty of the state's amateur and professional herpetologists were polled on the formation of a statewide herpetological society. The list of presumed-to-be-interested persons was compiled over three preceding years and from many sources — including the pages of VIRGINIA WILDLIFE. Biology departments at Virginia's colleges and universities were included in the list. A brief note explained the objectives:

(1) Promote scientific study of the Commonwealth's herpetofauna;

(2) Improve the quality of reporting occurrences of species of reptiles and amphibians;

(3) Encourage county surveys and the exchange of such verified data;

(4) Broaden public understanding in the interest of good conservation;

(5) Aid accurate newspaper reporting of unusual finds, etc.; and

(6) Build collections (where desired) for scientific and educational use.

The new group is open to both the amateur and the professional. It is hoped that it will provide the long-needed link between the two.

Letters sounding out prospective members' interest in the society were mailed to known enthusiasts from Arlington and Accomack Counties in the east to Bristol, in Washington County, in the west, and from Dismal Swamp to the Shenandoah Valley. The returns have been surprising: Reply cards were returned from Georgia, Ohio, and even Colorado! These were from three men in the military services. Each said he plans to return to Virginia and expressed an interest in the work of the society.

Particularly indicative of future success is the cordial response contained in notes from the state's renowned herpetologists, biology department men, other college faculty members, and enthusiastic amateurs of all ages.

Community, county, and regional (multi-county) meetings will be held. This is expected to start in the community where groups of members can get together and exchange ideas, specimens and scientific data. Mailing address of the Herpetological Society of Virginia is c/o the Acting Secretary, Route #2, Box 485, McLean, Virginia (Fairfax County). A statewide meeting at a more central location will be called in the fall to select a first slate of officers.

Nature is a frugal mother, and never gives without measure. When she has work to do, she qualifies men for that and sends them equipped.

—EMERSON

Ladies: why not wield your club for conservation?

By MARY LOUISE RIEDE

JUST among us conservation-minded ladies, did you know: That *your* club can play an extremely important part in the protection of our forests, soil, water and wildlife by including conservation activities as part of your regular programs? And what's more — that your participation in this work is vitally needed?

Each year the need becomes greater, and each year a greater number of women's organizations, some nationally organized, include conservation as a scheduled part of their programs. There are still many organizations that want to do so, and *would* if only they knew just how to go about it. Are you and your group among the latter? If you are, here's how to get on the conservation bandwagon:

First, get acquainted with the established conservation agencies near at hand: your Game and Fish department; U. S. Forest Service; Bureau of Land Management; U. S. Soil Conservation Service; State Forester's office, etc.

Next, get these professionals to give you practical suggestions for setting up a program for your group. Then go to work, under the guidance of the agency or agencies involved, and get the job underway.

Don't forget, in your eagerness to accomplish something, that all kinds of materials are available to you to help in planning your program. You may get color movies and posters from many sources. Publications are plentiful — magazines and a half-dozen pertinent pamphlets are available from your Game and Fish Department. Other agencies also have pertinent materials in quantity.

Next, set up an efficient working unit within your own group, beginning with the kind of *interested* conservation chairman who can arouse the enthusiasm of your members to:

Educate themselves on the conservation problems of the community, state and union. (Use conservation publications listed above plus selected magazine and newspaper articles.)

Study the value of natural resources to their own community in matters of providing jobs for the present and the future, etc.

Inform others on the importance of conservation problems — seizing them by their Dior-tailored lapels if necessary — to convince them of the paramount need for wise conservation practices.

Undertake through the guidance of the chairman and her committee conservation projects of a needed and practical nature. Specific examples are suggested below.

Once you've met with the state and federal conservation agencies and received their helpful suggestions, and once you've selected and briefed a chairman who meets the demands of the job, the next step is to *plan* — and planning requires a lot of prior investigation — your program.

There is no end to the projects you might undertake. Chances are you'll have to be very careful to keep from being so carried away with crusading enthusiasm that you undertake too much, and dissipate your efforts over too wide a range. Some specific projects that have proved to be most popular, feasible and of greatest benefit are:

"Show Me" trips: One of the most effective ways for gaining an understanding of conservation problems is through field excursions to forest or range areas where an agency representative has full opporunity to explain the fundamentals of good vegetative cover to hold the soils and prevent erosion; the importance of watersheds toward adequate water supply for all purposes; problems involved in wildland recreation areas, etc.

Group conservation meetings: Invite a conservation expert or experts to speak or conduct a panel discussion for your group, preferably with slides, movies and other graphic educational aids. Have your conservation chairman review current conservation problems. Have some of your own members study a specific issue, and present a panel discussion. Try organizing a conservation workshop.

Vandalism and litter problems: You can help discourage vandalism and "litterbugging" by helping to educate the public — through community campaigns, posters, talking to other organizations in schools, etc.

Conservation contests and awards: Offer recognition for meritorious performance, either by individuals or by community groups, or both. Many women's clubs sponsor poster, speech and essay contests on conservation subjects in the local schools, and in boy and girl scout troops, etc. Sponsorship should carry through to making arrangements for broadcasting or televising the winning speech or essay, or publicly displaying the winning conservation posters.

Forest-fire prevention campaigns: You can do an immense amount of good work on an organized basis by assisting established agencies with distributing literature and helping to publicize good fire prevention practices.

Encourage conservation education: You can encourage your local school administrators to teach conservation, reminding them that the adults of tomorrow are dependent on what treatment our resources are accorded today.

This is just a sample list of suggestions. There are countless other possibilities; probably you have thought of five or six better ones already. If you have, how about getting to work on them? Conservation needs your help!

Reprinted from *Colorado Outdoors*. Miss Riede is in charge of women's activities for the Rocky Mountain region of the U. S. Forest Service.

Game Commission Photo by Kesteloo

Mrs. Arthur A. Dugdale, conservation chairman for the Garden Club of Virginia, addresses Conservation Forum.

Garden Club of Virginia Holds Conservation Forum

On March 21 the Annual Conservation Forum of the Garden Club of Virginia was held at the Thomas Jefferson Hotel in Richmond. Mrs. Arthur A. Dugdale, state conservation chairman for the club, presided over the panel-forum, which presented several prominent Virginia natural resource leaders.

Virginia's conservationists believe the state's greatest need is a well informed public, inspired to do something about preserving our natural resources. At the forum, garden club representatives from throughout the state were given suggestions on promoting and developing soil, water, forest and wildlife conservation. One such project which has received widespread support from the Garden Club of Virginia is the scholarship program for teachers to attend conservation workshops during the summer, sponsored by the Virginia Resource-Use Education Council.

E. W. Mundie of Blacksburg, extension soil conservationist with the soil conservation committee, spoke on "Our Soil Resources—Key to America's Future"; water's value and importance to Virginia was discussed by Ross H. Walker of Richmond, State Water Control Board member; and a slide lecture on our forest resources and what they mean to Virginia was given by E. E. Rodger, chief of forestry relations, Virginia Division of Forestry, Charlottesville. Concluding speaker on the conservation program was J. J. Shomon, chief of the education division of the Virginia Game Commission and editor of Virginia Wildlife, who emphasized the growing importance of our wildlife resources.

Keenly interested in the promotion of conservation, the Garden Club of Virginia has extended its services into many fields. Paramount among these has been its work with youngsters. Many of the chapters each summer send a child to Nature Camp at Vesuvius, a project of the Virginia Federation of Garden Clubs.

Some of the club members give conservation talks to classrooms and scout groups; many clubs furnish schools with natural resource reference material; some have even furnished schools with tree boxes, used for tree identification.

Efforts of other chapters have centered on such worthwhile community measures as tree-planting programs and roadside billboard control.

1957-1958 WILDLIFE ESSAY CONTEST WINNERS ANNOUNCED

Winners in the eleventh annual wildlife essay contest, sponsored jointly by the Virginia Commission of Game and Inland Fisheries and the Virginia Division, Izaak Walton League of America, have been selected, according to I. T. Quinn, executive director of the Virginia Commission of Game and Inland Fisheries.

Prizes, totaling $1,400 in cash awards, were presented to 57 winning contestants and one winning school. Top winners received their awards in special ceremonies at the State Capitol on May 15, with Attorney General A. S. Harrison and officials of the sponsoring agencies officiating.

Prizes included:

One 12th grade, college scholarship	$ 400
Eight grand prize awards, $50 each, one for each grade, totaling	400
Eight second prizes, $25 each, one for each grade, totaling	200
Eight third prizes, $15 each, one for each grade, totaling	120
Sixteen honorable mention prizes, $10 each, two for each grade, totaling	160
Sixteen special mention prizes, $5 each, two for each grade, totaling	80
One school prize	40
Grand Total	$1,400

In addition, the top junior grade high school winner received an all-expense-paid trip to the national convention of the Izaak Walton League of America, held at Colorado Springs, May 12-16. Also, some 300 other successful students but non-cash prize winners were awarded certificates of merit for exceptional work.

ELEVENTH ANNUAL WILDLIFE ESSAY CONTEST AWARDS

SCHOLARSHIP AWARD—R. E. Lee Gildea, Jr., Senior, Lane High School, Charlottesville

IWLA TRIP TO NATIONAL CONVENTION—Henry Hatcher, Junior, Effinger High School, Rockbridge, Va.

SCHOOL AWARD—$40.00—Bland High School, Bland Co., Victor Gilly, Principal

GRAND PRIZE WINNERS—$50.00 each

Kenneth Rea, 12th grade, John D. Bassett High School, Henry County
Keith Shelton, 11th grade, Climax School, Pittsylvania County
Fay Hope Perry, 10th grade, James Wood High School, Frederick County
Mary Sue Arnold, 9th grade, Fincastle High Echool, Botetourt County
Alice Elizabeth Schools, 8th grade, Marriott High School, King & Queen County
Betty Hunter, 7th grade, Cismont School, Albemarle County
Beverley Waddill Carter, 6th grade, Battlefield Park School, Hanover County
Jackie Bailey, 5th grade, Lovington Elementary School, Nelson County

SECOND PLACE WINNERS—$25.00 each

Judith Sanders Acree, 12th grade, Farnham High School, Richmond County
Nancy Rose, 11th grade, Thomas Jefferson High School, Richmond City
John Lockridge, 10th grade, Churchville High School, Augusta County
Rona Reubin, 9th grade, Newport News High School, Warwick
Ann Rowe, 8th grade, Cathedral High School, Richmond City
Nancy Joyner, 7th grade, Courtland Elementary School, Southampton County
Carolyn Jones, 6th grade, Preston Park School, Roanoke City
Dennis Wayne Frazier, 5th grade, Ridgeway Elementary School, Henry County

THIRD PLACE WINNERS—$15.00 each

Robert Nelson Smith, 12th grade, Marriott High School, King & Queen County
Jacob R. Haught, 11th grade, Culpeper County High School, Culpeper County
Carol Weir Waters, 10th grade, Walsingham Academy, James City County
Betty Sue Newberry, 9th grade, Bland High School, Bland County
Byron H. Jackson, 8th grade, Buchanan High School, Botetourt County
Charles B. Speakman, 7th grade, Ridgeway Elementary School, Henry County
Douglas Griffith, 6th grade, Crossroads School, Norfolk City
James Carson Swann, Jr., 5th grade, Battlefield Park School, Hanover County

HONORABLE MENTIONS—$10.00 Each

Edward Davis, 12th grade, William Campbell High School, Campbell County
Gerald Franklin Gossom, 12th grade, Osbourn High School, Prince William County
Barbara Wright, 11th grade, Bland High School, Bland County
William Edward Chapman, 11th grade, R. B. Worthy High School, Smyth County
Grace Lee Roble, 10th grade, Oak Grove High School, Westmoreland County
Sharon Gullion, 10th grade, Walsingham Academy, James City County
Gail Mackenzie, 9th grade, Osbourn High School, Prince William County
Douglas Craddock, 9th grade, Climax School, Pittsylvania County
George B. Keghy, 8th grade, Bland High School, Bland County
John Kaufman, 8th grade, Lee Junior High School, Roanoke City
Carol Bugg, 7th grade, Christiansburg Elementary School, Montgomery County
Frank Pitts, 7th grade, Oak Grove School, Westmoreland County
Jane Bowman, 6th grade, Gladesboro School, Carroll County
William F. Stone, Jr., 6th grade, Junior High School, Henry County
Kay Agnor, 5th grade, Churchill Elementary School, Augusta County
Kathie Saunders, 5th grade, Preston Park Elementary School, Roanoke City

SPECIAL MENTIONS—$5.00

Joyce Cummings, 12th grade, St. Joseph's High School, Petersburg
Glenn Good, 12th grade, Halifax County High School, Halifax County
David Heretick, 11th grade, St. Joseph's High School, Petersburg
Judy Rollins, 11th grade, Oak Grove High School, Westmoreland County
Jack Pugh, 10th grade, William Fleming School, Roanoke City
Richard Fletcher, 10th grade, Groveton High School, Fairfax County
Joanne Marchant, 9th grade, Oak Grove High School, Westmoreland County
Wrightson S. Lonsman, 9th grade, E. C. Glass High School, Lynchburg City
Kenneth Underwood, 8th grade, Bland High School, Bland, Va.
Alan Acord, 8th grade, Churchville High School, Augusta County
Barbara Whiteside, 7th grade, Mountain View School, Rockbridge County
Danielle Garrick, 7th grade, Newport News High Scool, Newport News City
Stephen Boling, 6th grade, Burke's Garden School, Tazewell County
Donald Kidd, 6th grade, Lovington Elementary School, Nelson County
Edith Ann McAnelly, 5th grade, Colonial Beach Elementary School, Westmoreland County
Clyde Dishner, 5th grade, Melrose School, Roanoke City

Insecticides are Threat to Humans and Wildlife

The National Audubon Society has urgently recommended that the Department of Agriculture stop all insect control programs in which highly toxic chemicals are broadcast unless incontrovertible evidence becomes available that no serious damage to humans and wildlife resources will result.

The Society specifically requested the Secretary of Agriculture to stop the proposed control program for the imported fire ant on some 20 million acres in nine southern states. The program is already underway.

At the same time, the Society warned the general public that all use of highly toxic modern insecticides, fungicides and so-called pesticides by governmental agencies, farmers, and other landowners, including gardeners, carries with it a much higher potential of harm to human beings and wildlife than is generally recognized.

"Insecticide hazards may well rank in seriousness of adverse effects with the dangers of radioactive fallout," said Mr. John H. Baker, president of the Society. "The use of toxic chemicals for the purpose of protecting agricultural and forest crops has now skyrocketed to the point where cumulative secondary poisoning of human beings and wildlife, which already exists to some extent, may become catastrophic."

Mr. Baker cited tests conducted by the U. S. Fish and Wildlife Service, which reveal that in the second generation of exposure to insecticides in their diet, birds invariably become incapable of reproduction. "When you realize that these poisons may well have similar cumulative effect on the human system, it is unthinkable that widespread programs be undertaken in the absence of proof that there is no risk of such result," said Mr. Baker.

"In any case, the burden of proof should rest on the agency employing the toxic substance, and not on the individual citizen," he said. "This proof should be available for public evaluation long before mass-spraying programs are undertaken. To make such tests concurrently with a chemical spraying operation is obviously highly unsatisfactory, for the damage will have been done by the time the tests are complete."

With specific reference to the fire ant program, the Society stated that the chemicals proposed for use are far too lethal for widespread aerial or ground applications. According to the U. S. Department of Agriculture, dieldrin, one of the most deadly of modern insecticides, is to be applied at the rate of two pounds per acre. In some areas the dosage may reach four pounds to the acre, the Department says.

Tests by the U. S. Fish and Wildlife Service show that one pound of dieldrin has sufficient toxicity to kill approximately four million quail chicks. The California Department of Fish and Game reports that only 1½ pounds of dieldrin per acre caused the death of pheasants, quail, gophers, snakes, jack rabbits, dogs, chickens, geese and turkeys.

In calling attention to the fact that some, if not most, of the chemicals would be applied by aircraft, the Society stated experience shows that it is impossible to apply chemicals from the air without some multiple doses and complete misses.

"The National Audubon Society recognizes the seriousness of the fire ant problem," said Mr. Baker. "We can well understand that citizens of the affected states are eager to have this troublesome insect controlled. But we doubt very much that they would be eager to have their countryside doused with these lethal chemicals if they knew the extent to which they, their livestock, and those that consume crops in the area may suffer."

FOSSILS ARE FUN

(Continued from page 11)

times by rising tides and sheer cliffs. This can end in a chilly swim or a long wait for low tide.

Collecting is an excellent way to develop an interest in geology and the natural sciences. It is a great experience to hold in your hand the bone or tooth of an animal that lived twenty million years before man ever appeared on the face of the earth.

Finally, after many pleasant days and many weary miles, you get together a good collection and you start trading. You find some fellow in California who wants to trade you for a piece of coral or a lady in Maine that wants to trade for a few nice shark teeth. To date we have fossils from California, Arizona, New Mexico, Nebraska, Mexico, Maryland and, of course, Virginia. We are now dickering for others. Among our fossils are petrified woods, prehistoric remains of whales, snails, sharks, many shellfish, corals, camels, buffalo, porpoises, horses, rays, elephants, and others. Fossils are fun.

Another Whooping Crane Egg Laid

According to a release in the *Times-Picayune,* Josephine, Audubon Park's productive whooping crane in New Orleans, laid another egg recently. Park officials immediately took precautionary measures in hopes the egg will hatch and produce the sixth whooping crane in captivity. These measures include keeping the public away from the area, the closing of the cages at the top with wire and the closing of adjacent baseball diamond No. 2.

Of the five whooping cranes now in captivity, four are in Audubon Park. The only other whooping crane in captivity is one at a refuge near San Antonio, Texas.

Josephine laid an egg in 1955 but it was destroyed. She laid two more in 1956 and both hatched but one of the young disappeared and the other lived only for 46 days.

The two eggs she produced last year hatched and both the young whooping cranes survived. They are in a cage near their parents.

Park superintendent George Douglass said that if Josephine follows the pattern of previous years, she would produce another egg in two or three days.

Radford IWLA Sponsors Hunter Safety Course

Latest project of the Radford chapter of the Izaak Walton League of America has been the promotion of safer hunting in that area. As one way of accomplishing this, the chapter has chosen to sponsor a National Rifle Association hunter safety course.

Left to right: Assistant chief of police W. D. Lorton presents NRA certificate to William Wickham. Certificates also went to Robert Nicol, front left, Howard Claflin, Jr., Ronald Hammond and G. B. McClelland, Jr. The instructors standing in the back row are Joe Custer, Al McCaskey, Jr., Jim Rutherfoord, Dr. E. V. Crockett, Howard Claflin, chief instructor, and Ralph Taylor, front row right.

The first class of five boys finishing the course have received their certificates of completion. A second course began in April.

Atlantic Flyway Waterfowl Inventory

In an effort to determine the number of waterfowl in the various flyways each year, the U. S. Fish and Wildlife Service conducts an annual inventory in cooperation with state game and fish personnel. Starting on January 16, 1958, the annual inventory was initiated in the Atlantic flyway.

According to the figures presented by federal game management agents and other field personnel in the Atlantic flyway, a 22 percent decrease was found in the total waterfowl population. The over-all decrease in geese was found to be less serious than that for ducks.

Virginia hunters apparently are justified in their complaints of duck shortages during the past season. Inventory figures revealed a decrease of 48 percent in all birds in the Old Dominion. High tides on the inventory dates caused the birds to scatter and may have led to inaccurate figures.

What Is Research?

Dr. Albert Szent-Gyorgyi of the Marine Biological Laboratory in Woods Hole, Massachusetts — and a Nobel prize winner — has pointed out that research is four things:

1. Brains with which to think.
2. Eyes with which to see.
3. Machines with which to measure.
4. And money.

"Give him more line . . . He's got plenty of fight left."

Conservation Reference Materials Listed

Materials for Teaching Conservation and Resource-Use, a 55-page bulletin, has been prepared by the National Association of Biology Teachers and is now available for a nominal fee from Interstate Printers and Publishers, Inc., Danville, Illinois.

The bulletin includes listings of free and inexpensive materials from state and national agencies, selected references, films and film strips, prepared by various members of the Conservation Committee of NABT, according to Dr. Richard L. Weaver of the University of Michigan, chairman of the Committee.

The new materials listed in this bulletin were assembled as the appendix of the *Handbook for Teaching Conservation and Resource-Use,* reprinted in January by the Conservation Committee of the National Association of Biology Teachers. The conservation handbook of 500 pages is also available from Interstate Printers and Publishers, with educational discounts available to schools and teachers.

Tackle Exhibit

The Virgiina Trust Company of Richmond devoted its April showcase space to a beautiful exhibit of big-game sport fishing tackle which attracted hundreds of interested visitors.

The exhibit was prepared by Ross H. Walker of Richmond, member of the state Water Control Board and prominent big-game fish sportsman.

Six different sets of tackle pieces were shown including rods, reels, line and bait, ranging all the way from gear for the heaviest of sea denizens to such lightweight tackle busters as bluefish.

Game Commission Photo by Kesteloo

Ross H. Walker, right, explains the various types of big-game fish tackle to C. M. Crenshaw, vice president, Virginia Trust Company.

COMMISSION BRIEFS

Carl H. Nolting, Former Commission Chairman, Passes

It is with deep regret that the Commission learned of the recent passing of Carl H. Nolting, former chairman of the Commission of Game and Inland Fisheries. Mr. Nolting, a native Richmonder, was appointed to the Commission in 1930 and served as its chairman from 1933 until 1942, when it was reorganized to include an executive director. He continued with the Commission in an advisory capacity until his resignation in 1946.

Mr. Nolting was also a former member of the Virginia House of Delegates and a member and chairman of the Louisa County Board of Supervisors.

Commission Assists Outdoor Education Workshop

Messrs. Quinn, Shomon, Martin, Kesteloo and Carpenter gave substantial field assistance to the recently conducted outdoor education workshop, sponsored by the state Department of Education and the Outdoor Education Project of the American Association for Health, Physical Education and Recreation in cooperation with the state Inter-Agency Recreation Committee and the Virginia Association for Health, Physical Education, and Recreation.

Some 100 teachers attended the three-day workshop held at Camp Richmond May 1, 2, and 3.

Highlights of the workshop included instruction in three general methods of fishing; rifle range practice and demonstration of shotgun and rifle shooting under simulated hunting conditions; water safety procedures; woods survival skills; outdoor cooking; archery; photography; astronomy; and conservation relationships.

Lake Brittle to Open

The Commission's 77-acre lake in Fauquier County will reopen to public fishing on Saturday, June 28. The lake was drained recently by fish biologists and fish regrouped.

New Fishing Leaflet

Virginia fishermen will be interested in the Commission's new 8-page leaflet just off the press, showing where to fish and what to catch in Virginia's fresh waters. Individual copies are free upon request from the Richmond office of the Commission.

Dan E. Cantner Leaves Commission

Dan E. Cantner, recently appointed assistant chief of the Commission's education division and associate editor of VIRGINIA WILDLIFE magazine, has resigned from his position and accepted a better-paying assignment with the private organization, VIRGINIA FORESTS, INC. Cantner served as special services officer in the education division for several years, working in the southeastern district out of Williamsburg before coming to the Richmond office. Popular, active and hard-working, Dan's services will be greatly missed by all associated with him and particularly the sportsmen and youth groups with whom he worked in such a pleasant and cooperative manner.

Cantner is the second trained wildlife specialist to leave the Commission in 3½ months—largely for more pay. Bill Kellner resigned from his post in January.

Saw Too Much for Fox

Game Warden Jennings Whitman, Rockingham County, reports that Willie Bolton of Singer's Glen was sawing wood in his barn recently when his dogs suddenly started barking. Upon going to the door for a look outside, Bolton was confronted with a gray fox coming directly towards him. Still carrying his running power saw, Bolton jumped to one side to avoid the intruder. The fox whirled and made a second approach whereupon Bolton speeded up the chain saw and pushed it towards the fox's face. The high speed chain proved too much for Reynard and kept Bolton from being bitten by a fox believed to have been rabid.

Warden Praised

Game Warden H. H. Pittman, of Lancaster County, has been commended by the Mary Ball Society, Children of the American Revolution for his help in making it possible for their organization to win first prize in Virginia for its conservation project during 1957.

Pittman presented the group with a visual aid program on animals and presented a talk on birds. The organization also received several pieces of literature on wildlife conservation and was given seed to plant for both game and song birds.

Prince William IWLA

Prince William County game warden Walter Flory reports that the Prince William chapter of the Izaak Walton League has erected a new clubhouse in a wooded ridge section on Lake Jackson.

The chapter officially opened its clubhouse on April 19 by featuring a remarkable wildlife dinner. Warden Flory, an active member, and other hard-working Waltonians served wild turkey, bear, deer, coon, rabbit, squirrel, and quail. Some 125 people were present for the occasion.

J. J. Shomon, editor of VIRGINIA WILDLIFE, was main speaker.

Commission Field Staff Cooperates

Commission fisheries biologists, game biologists and law enforcement officers frequently get together on cooperative projects and assignments.

An example of how personnel of the three divisions work together was seen recently at the opening of the new trout lake in Shenandoah County, where a tremendous crowd of fishermen greeted the opening day. Biologists and law enforcement men worked in close harmony operating creel census stations, checking licenses, answering questions, etc., as shown by the picture below.

Game Commission Photos by Kesteloo

In addition to the 20 boats available at the lake, 30 private craft were launched on opening day.

LAKE SHENANDOAH HAS BIG DAY

Bob Martin (left) instructs biologists and wardens on creel census.

Lake Shenandoah, one of two recently completed trout lakes, attracted 450 fishermen who removed 989 trout before opening day was over. A total of 4000 brook and 3000 rainbow had been stocked.

A close check was made by fish technicians and wardens on the number of fish caught, methods and baits used and hours fished. This information will determine future management and stocking.

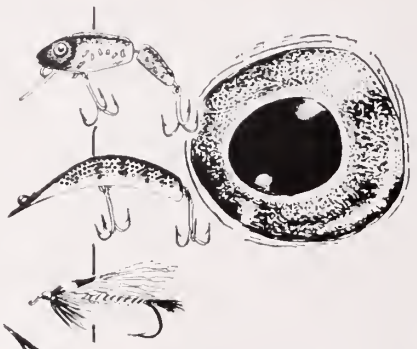
Similar scenes were also taking place at the 65-acre Scott-Wise trout lake in Scott County.

Max Ailor, outdoor writer for the *Richmond Times-Dispatch*, completes his limit of five fish.

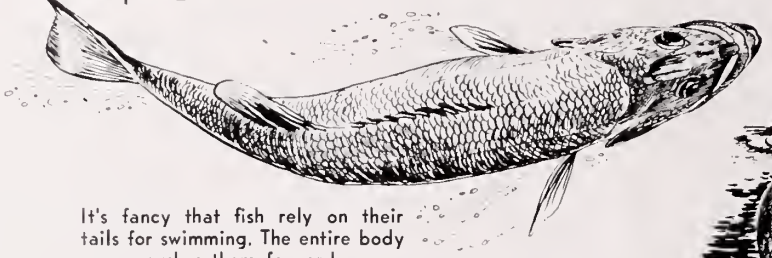
Though fishermen were scattered around the entire lake, fishing from the dam proved to be the most popular and rewarding.

Jack Sheridan, fish technician, checks the success of a father and son.

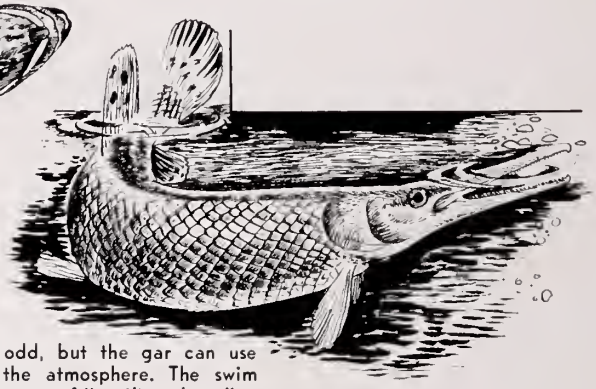
FISH FACTS AND FANCIES



Most experts agree that it is a fact that fish can tell the difference between colors.

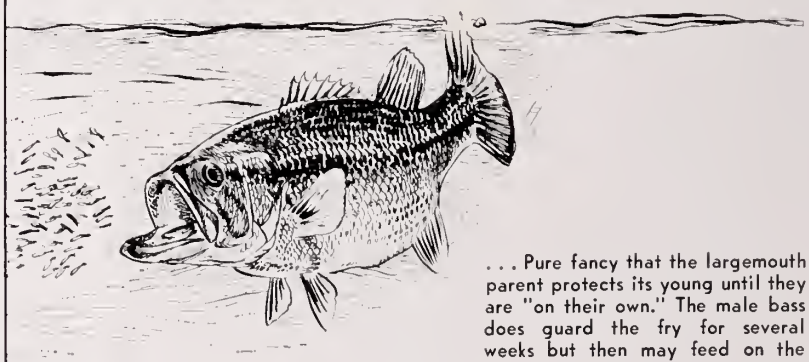


It's fancy that fish rely on their tails for swimming. The entire body pushes them forward.



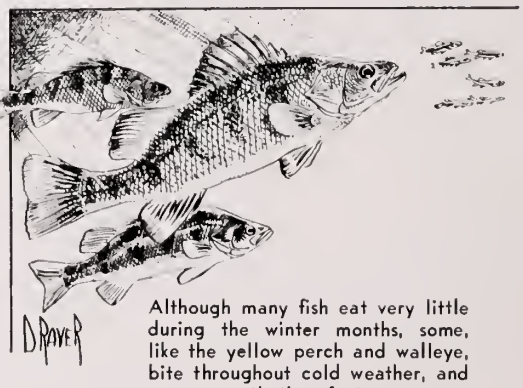
It may seem odd, but the gar can use oxygen from the atmosphere. The swim bladder is a type of "auxiliary lung."

Yes, it's a fact . . . Fish do change color. . . . Sometimes within a few seconds,



. . . Pure fancy that the largemouth parent protects its young until they are "on their own." The male bass does guard the fry for several weeks but then may feed on the same young fish.

Don't be too concerned about a struggling fish. It's fancy that fish feel much pain—but they still don't like being caught!



Although many fish eat very little during the winter months, some, like the yellow perch and walleye, bite throughout cold weather, and that's a fact.